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THE PROPOSED STUDY OF THE SALMON OF THE PENOBSCOT RIVER

Pratt (via Gordon)

A two-year study of the Atlantic salmon of the Dennys River in Washington County, Maine was begun in September, 1940 with the purpose of determining the factors limiting the natural run of fish in the river and determining means of lessening these factors. The study is made possible through funds from a fellowship known as the William Converse Kendall Memorial Fellowship. A similar fellowship, instituted in October, 1941, provides for a study of the Atlantic salmon in the Penobscot River in Maine. Both rivers not many years ago supported large runs of salmon. Today, although some fish do return, the number is greatly reduced, and fry are being planted annually to offset the reduction in numbers of spawning fish.

The Dennys River is quite short in comparison to the Penobscot and has no obstacles to passage such as dams and industrial pollution which have been possible limiting factors in the Penobscot. Until recently, with the construction of fishways in all dams, the salmon have been unable to reach the excellent spawning grounds of the East Branch and its tributaries.

In the Penobscot River it is planned to make an intensive study of the East Branch and its tributaries similar to the study now being carried on in the Dennys River, and a more extensive study of the lower parts of the river. In both cases the work will depend largely on the size of the run of salmon. If a large number of fish enter the river their progress upstream will be followed until they

reach the spawning grounds in order to determine, if possible, how efficient the fishways are, and what other factors might tend to retard their ascent. An attempt will be made to determine the beginning, peak, and end of the run, and the time necessary to complete the journey to the spawning grounds. If very few fish should enter the river this part of the study will be omitted.

Because so many young are being planted in the East Branch, and because the East Branch and its tributaries were once great spawning areas the work here will be much more intensive. It will include locating and mapping the physical features, determining food and water conditions and mortality of young. Each tributary will be surveyed and a map made showing the location, size, and quality of pools, rapids, spawning grounds, and dead-water stretches. At intervals during the summer and at intervals along the streams water and air temperatures will be taken, and oxygen and acidity tests made. A study of food conditions in the river and its tributaries will be made by seining to determine the abundance and species of forage fish, by bottom sampling to determine the abundance and types of bottom-food organisms, and by observing surface drift.

A number of parr and smolts will be collected by seining in the type areas, such as pools, rapids, and dead-water stretches, to determine the degree of utilization of these areas, the extent to which planted fish migrate throughout the areas, and to supplement the study on food conditions. These smolts will also be used for age and growth-rate studies.

Predation on the young by other fish, birds, and other predators will be determined by stomach analyses and observations on these predators.

If time is available, some fish will be tagged before planting to determine the extent of migration by the smolts throughout the different areas. Such marking might show that the plantings should be distributed over larger or different areas. These marked fish might also be used for large-scale migration and survival studies if future work is carried on.

If large numbers of adult fish reach the spawning grounds the work will include location and mapping of the most-used spawning areas, location and observation of nests. No attempt will be made to collect adult fish because the natural runs have been so small in recent years.

From this study it is hoped to learn what factors are limiting the size of the natural runs, and what is the survival of the thousands of planted fish, and when these factors are known to determine some way of lessening their effect.

Respectfully submitted,

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Kendall Fellow

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